Before the
Federal Communications Commission
Washington DC 20554

In the Matter of	**)**	
	)	GN Docket No. 18-122
Expanding Flexible Use of the 3.7 GHz	**)**	RM-11791
to 4.2 GHz Band	**)**	RM-11778

REPLY COMMENTS OF COMSEARCH

Comsearch, a CommScope company, files these reply comments pursuant to the Order and Notice of Proposed Rulemaking in the above-captioned proceeding.[1]

For over 40 years, Comsearch has performed frequency coordination and licensing services in the 3.7-4.2 GHz band ("4 GHz Band"). We have coordinated and licensed thousands of FS and FSS stations and still coordinate, license and register hundreds of stations annually.

Historically, the 4 GHz Band has supported successful sharing between FS microwave stations for long-haul telephony and FSS earth stations. Ultimately, several circumstances led to failure of the ostensibly co-primary sharing.

The earth station receivers are sensitive and have stringent interference objectives. There are also unequal licensing procedures that allow earth stations to protect the entire band for all visible look angles (i.e., full-band, full-arc), while fixed links must coordinate and license only the channels and paths planned for use. Thus, broad-scale coordination between FSS and FS systems was difficult. Nevertheless, microwave users could at times justify the difficulty and expense of coordinating with full-band, full-arc earth stations when they, too, would request all

[1] *Expanding Flexible Use of the 3.7 GHz to 4.2 GHz Band*, GN Docket Nos. 18-122, 17-183 (Inquiry Terminated as to 3.7-4.2 GHz), Order and Notice of Proposed Rulemaking, FCC 18-91 (released July 13, 2018) ("Notice").

the channels in the band for a high-capacity long-haul system. But as FS usage evolved away from these kinds of links, the coordination difficulties and expense could not be justified. FS usage eventually migrated to different bands, and the 4 GHz Band became almost exclusively a satellite band.

To now again expand flexible use of the 4 GHz Band, Comsearch agrees it will be necessary for earth station users to provide detailed technical parameters of FSS earth stations including critical elements that would be needed for any sharing or transitional sharing possibilities. These technical parameters should include specific transponder frequency ranges and satellite look angles, for example. Without such specifics, our experience indicates there would be insufficient availability of spectrum except in some rural areas. Comsearch recognizes the desire of satellite and earth station operators to avoid being burdened by new data requirements but we believe that automated database procedures could be developed to keep usage records up to date while minimizing the administrative load.[2]

We have also noted several proposals in the NPRM and comments that may have merit for flexible sharing.

First, we agree that relocation of urban FSS earth stations to rural antenna farms as suggested by T-Mobile[3], may be feasible in some markets at reasonable cost and while providing comparable replacement service. We believe that relocation in some areas combined with re-packing some FSS users in frequency could free-up a sizable portion of the band for flexible use. New entrants would take on responsibility for the relocation and/or re-packing costs as has

[2] For example, FSS users could install inexpensive monitoring devices at their receivers to identify transponder frequency and antenna look angle that would automatically update either the commission's databases or third-party data bases.

[3] T-Mobile at 9-10.

happened in previous relocations (e.g. 1.9 GHz and AWS bands). As FWCC points out[4], the remaining 4 GHz microwave users should also be entitled to relocation costs.

Second, if the Commission decides to allow point-to-multipoint fixed wireless broadband systems (P2MP), Comsearch agrees that Part 101 coordination and licensing can protect FSS earth stations from harmful interference. Our experience coordinating extended C-band earth stations grandfathered in the 3650 MHz band with Part 90 licensees suggests that sharing is possible. Given the much higher density of earth stations in the 4 GHz band, we believe that Part 101 notify-and-respond coordination would be more effective at identifying spectrum for P2MP while fully protecting earth stations as opposed to negotiation inside 150 km zones under Part 90. However, P2MP spectrum would likely only be available in rural areas significantly separated from earth stations. On the other hand, while coordinating P2MP service area polygons against each other may be attempted under Part 101, Comsearch is concerned that this process would face difficulty in facilitating sharing while avoiding arbitrary mutual exclusivity of systems. For instance, with point-radius or point-radius-sector service areas[5] or other polygonal service areas, conflicts will inevitably arise where there is overlap between systems. The first-in operator would apparently have precedence even though there would not necessarily be a strong relationship between overlap of service areas and interference to any particular transmission link. Engineering solutions cannot resolve interference when it is defined only as coincidence of arbitrarily defined service areas. Perhaps the Commission should consider using non-exclusive spectrum rights for the P2MP systems with respect to each other like the 3650 MHz band. Better yet, a Spectrum Access System (SAS) like the one for the adjacent CBRS band could be

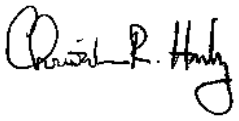
[4] FWCC at 4-5.

[5] Notice at ¶ 120.

employed to handle coordination and prioritization of the spectrum. The SAS could also collect FSS earth station transponder frequency and satellite look angle information on an ongoing basis. Firm and enforceable buildout rules for P2MP systems would certainly be needed to avoid spectrum warehousing.

Finally, Comsearch agrees that Part 101 coordination with FSS earth stations could also be used to enable entry of Industry 4.0 5G private network operations in some portion of the band.[6] The interference potential of these systems would be limited because of their described indoor operation, enhancing the possibility of sharing.

Respectfully submitted,



Christopher R. Hardy
Vice President
Comsearch, a CommScope Company
19700 Janelia Farm Blvd.
Ashburn, VA 20147

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[6] Reply Comments of Robert Bosch, LLC and Supporting Parties at 4-5.